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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/809,523 | 03/26/2004 | Kesahiro Koike | Q80755 | 7526 |

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| EXAMINER | |
|---|---|
| VINH, LAN | |
| ART UNIT | PAPER NUMBER |
| 1765 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 03/19/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/809,523 | KOIKE, KESAHIRO | |
| | Examiner | Art Unit | |
| | Lan Vinh | 1765 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on 2/20/2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-3 and 5-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3 and 5-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 090806.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/20/2007 has been entered.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 5, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al (US 2002/0179576) in view of Taylor (US 5,761,790)

Takeuchi discloses a method for fabricating a glass substrate which is suited for photomasks/mask blank used in photolithography, the glass substrate having a flatness of 0.01 microns (page 2, paragraph 0015), which reads on a mask blank being used in a transfer mask which is for use with F2 excimer laser light since the glass substrate for an EUV mask blank required to have a flatness of 0.05 microns or less as disclosed in page 6 of the instant specification. The method comprises the steps of:

measuring the height of the peak and valleys on the surface of the glass substrate (page 1, paragraph 0010), which reads on measuring a convex/concave profile of a surface of the glass substrate for a mask blank

obtaining the data about the peaks and valleys on the glass substrate (page 2, paragraph 0021), which reads on specifying the degree of convexity of a convex portion present on the glass surface, plasma etching/local machining upon the substrate surface having the peaks and valleys to control the flatness of the surface of the glass substrate to 0.04 nm (not greater than 0.25 microns) (page 2, paragraph 0021), which reads on controlling a flatness of the surface of the glass substrate to a value not greater than a reference flatness required in lithography using the EUV light as the exposure light since the reference value of the flatness being 0.05 micron as disclosed in page 6 of the instant specification

subsequently, subjecting the glass surface to a polishing step (page 2, paragraph 0016)

The limitation of claim 5 has been discussed above

Unlike the instant claimed invention as per claims 1, 2, 3, 10, Takeuchi fails to specifically disclose performing a non-contact polishing step of polishing/float polishing, the surfaceof the glass substrate subjected to the local machining by the action of a machining liquid comprises water interposed between the surface of the glass substrate and a surface of a polishing tool without direct contact therebetween

Taylor discloses a non-contact polishing method that may be utilized for fabricating x–ray lithography optics, the method comprises a step of performing a non-contact

polishing step of polishing a glass surface , the surface of the glass substrate subjected to the local machining by the action of a machining liquid comprises water interposed between the surface of the glass substrate and a surface of a polishing tool without direct contact therebetween (col 7, lines 10-27)

One skilled in the art at the time the invention was made would have found it obvious to Modify Takeuchi method by performing a non-contact polishing step of polishing the glass surface as per Taylor since Taylor discloses that the non-contact polishing tool introduces little or no subsurface damage and it has a significant lower production cost than traditional methods (col 3, lines 60-67; col 4, lines 1-5)

4. Claims 6-8, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al (US 2002/0179576) in view of Taylor (US 5,761,790) and further in view of Ohnuma (US 6,924,068))

Takeuchi as modified by Talor has been described above. Unlike the instant claimed inventions as per claims 6-8, 11-13, Takeuchi and Taylor fails to disclose the steps of forming a thin on the glass substrate and patterning the thin film and transferring the thin film pattern of the transfer mask onto a semiconductor substrate by lithography

Ohnuma discloses a method for fabricating a photomask comprises the step of patterning the thin film and transferring the thin film pattern of the transfer mask onto a glass substrate by lithography (col 4, lines 53-60)

Since Takeuchi is concerned with etching the glass substrate, one skilled in the art at the time the invention was made would have found it obvious to modify Takeuchi and Taylor method by patterning the thin film and transferring the thin film pattern of the

transfer mask onto a glass substrate by lithography as per Ohnuma because Ohnuma discloses that resist pattern formed by photolithography is utilized as a mask for processes such as etching base film (col 1, lines 16-20)

5. Claims 9, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al (US 2002/0179576) in view of Taylor (US 5,761,790) and further in view of Ohnuma (US 6,924,068))

Takeuchi as modified by Talor has been described above. Unlike the instant claimed inventions as per claims 9, 14, Takeuchi and Taylor fails to disclose forming a reflective multilayer on the glass substrate and forming a light absorber film on the reflective multilayer film

Ohnuma discloses a method for fabricating a photomask comprises the step of forming a reflective multilayer includes chromium on the glass substrate and forming a photoresist/light absorber film on the reflective multilayer film (col 4, lines 58-62)

One skilled in the art at the time the invention was made would have found it obvious to modify Takeuchi and Taylor method by forming a reflective multilayer includes chromium on the glass substrate and forming a photoresist/light absorber film on the reflective multilayer film as per Ohnuma because Ohnuma discloses that the photomask utilized in the semiconductor manufacturing process comprises of a light-blocking film/reflective film formed in the desired photoresist pattern (col 1, lines 11-21)

***Response to Arguments***

6. Applicants argue that Nakagawa does not disclose "local machining upon the convex portion". This argument has been considered but are moot in view of the new ground(s) of rejection based on Takeuchi since Takeuchi discloses a step of plasma etching/local machining upon the substrate surface having the peaks and valleys to control the flatness (page2, paragraph 0021), which reads on the claimed limitation of "local machining upon the convex portion"

Applicants argue that Nakagawa does not disclose that the non-contact polishing /float polishing step is performed after the local machining as required in claim 1. This argument has been considered but are moot in view of the new ground(s) of rejection based on Takeuchi and Taylor since Takeuchi and Taylor discloses performing a non-contact polishing after the plasma etching/local machining step

Applicants argue that Nakagawa does not disclose controlling a flatness of the surface of the glass substrate to a value not greater than a reference flatness required in lithography using the EUV light. This argument is moot in view of the new ground of rejection based on Takeuchi since Takeuchi discloses plasma etching/local machining upon the substrate surface having the peaks and valleys to control the flatness of the surface of the glass substrate to 0.04 nm (not greater than 0.25 microns) (page 2, paragraph 0021),

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

LV
March 13, 2007